Business Statistics in the Telecommunications Sector

The liberalisation of telecom markets continues to shape the sector

Joachim Hubertus

Views on the telecom sector:

- Telecom hardware manufacturing: turnover almost doubled between 1993 and 1998 – employment increasing at a slower pace
- Investment in telecom services dominant throughout the European Union – hardware manufacturing important only in Sweden and Finland

![Figure 1: Gross investment in tangible goods in 1997 – shares of telecom hardware manufacturing and telecom services.](image)

- The liberalisation process in telecom influences the pricing structure across Member States for telecom services
- UMTS licences - beauty contest or auction: the European countries launched the third generation of mobile communications systems
- Rapid development in mobile technologies - total mobile telephone sales were up by 65% in 1999

This issue of Statistics in Focus analyses the following NACE groups (see methodological notes on page 7):

NACE Rev. 1 32.2: manufacturing of television and radio transmitters and apparatus for line telephony and line telegraphy, referred to as telecom hardware manufacturing.

NACE Rev. 1 64.2: A sub-section of business services, referred to as telecom services.

Only countries, for which data are available, are shown in the graphics.
Telecommunications together with the computer industry and mobile communications technology are growing rapidly, reaching high market share values.

Figure 2 illustrates the new requirements and the quest for market positions, comparing turnover with employment development in telecom hardware manufacturing.

Throughout the European Union, figures for turnover in hardware manufacturing almost doubled between 1993 and 1998, while employment increased here by only 16% during the same period.

Most Member States (EU aggregated figures are not available) register a similar trend for telecom services, where the ongoing liberalisation since the mid-eighties has had a particularly strong impact on market conditions.

Pricing structure disparities in telecom services result in different productivity levels across Member States

Looking at the total figures for wealth created in both of the areas observed, which can be expressed in terms of value added at factor cost, again the Member States show considerable disparity (Figure 3).

As regards hardware manufacturing, Sweden stands out with the highest value (ECU 5.1 billion), followed by France (3.5), Finland (1998 data) and Italy (both 3.3) and the United Kingdom (2.9).

For telecom services, France (ECU 16.7 billion), Italy (12.8) and Spain (7.9 – 1994 data) predominate at European level (no figures available for the UK).

As concerns gross value added per person employed (apparent labour productivity) in telecom services, the Member States show a heterogeneous picture, with approximate values varying between ECU 80 000 and 130 000 except in
Luxembourg, which recorded a particularly high value of ECU 536 000 (1995) (Figure 4).

The exceptionally high figures for the apparent labour productivity in Luxembourg telecom services may be related to the structure of the telecom companies situated there.

Quite a few companies in Luxembourg deal with mobile phone licences in Latin America, Asia and Africa. These specific activities have a significant impact on the indicators involved, as the business is conducted by small companies with low costs.

In telecom hardware manufacturing, Sweden and Finland again predominate and show that they are the most specialised countries in the European Union in this area. Sweden shows the highest value (around ECU 154 000), followed by Finland (ECU 130 000 - 1998) Austria (85 000) and Belgium (81 000).

![Figure 4: Apparent labour productivity in telecom hardware manufacturing and telecom services in 1997](image)

Source: Eurostat SBS database

### Main Variables

<table>
<thead>
<tr>
<th>NACE Rev. 1</th>
<th>B</th>
<th>DK</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>IRL</th>
<th>I</th>
<th>L</th>
<th>NL</th>
<th>A</th>
<th>P</th>
<th>FIN</th>
<th>S</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of enterprises (units)</td>
<td>32.2</td>
<td>...</td>
<td>120</td>
<td>1 315</td>
<td>17</td>
<td>7 685</td>
<td>0</td>
<td>60</td>
<td>13</td>
<td>69</td>
<td>76</td>
<td>122</td>
<td>927</td>
<td></td>
</tr>
<tr>
<td>64.2</td>
<td>...</td>
<td>165</td>
<td>279</td>
<td>1 059</td>
<td>1 123</td>
<td>53</td>
<td>238</td>
<td>42</td>
<td>475</td>
<td>159</td>
<td>115</td>
<td>210</td>
<td>238</td>
<td></td>
</tr>
<tr>
<td>Number of persons employed (units)</td>
<td>32.2</td>
<td>7 794</td>
<td>3 092</td>
<td>...</td>
<td>1 162</td>
<td>70 834</td>
<td>3 807</td>
<td>78 419</td>
<td>0</td>
<td>...</td>
<td>15 885</td>
<td>2 256</td>
<td>25 645</td>
<td>33 442</td>
</tr>
<tr>
<td>64.2</td>
<td>...</td>
<td>29 730</td>
<td>15 262</td>
<td>...</td>
<td>...</td>
<td>163 538</td>
<td>13 229</td>
<td>96 203</td>
<td>406</td>
<td>36 300</td>
<td>23 459</td>
<td>20 527</td>
<td>18 062</td>
<td>...</td>
</tr>
<tr>
<td>Number of employees (units)</td>
<td>32.2</td>
<td>7 791</td>
<td>3 062</td>
<td>...</td>
<td>11 563</td>
<td>70 644</td>
<td>3 806</td>
<td>68 824</td>
<td>0</td>
<td>...</td>
<td>15 885</td>
<td>2 256</td>
<td>25 642</td>
<td>33 405</td>
</tr>
<tr>
<td>64.2</td>
<td>...</td>
<td>29 616</td>
<td>15 249</td>
<td>80 378</td>
<td>...</td>
<td>...</td>
<td>163 474</td>
<td>13 173</td>
<td>96 025</td>
<td>403</td>
<td>35 770</td>
<td>23 336</td>
<td>20 487</td>
<td>17 874</td>
</tr>
<tr>
<td>Average number of persons employed per enterprise (units)</td>
<td>32.2</td>
<td>62</td>
<td>97</td>
<td>54</td>
<td>224</td>
<td>10</td>
<td>...</td>
<td>1 222</td>
<td>33</td>
<td>337</td>
<td>274</td>
<td>43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64.2</td>
<td>...</td>
<td>92</td>
<td>...</td>
<td>198</td>
<td>250</td>
<td>405</td>
<td>11</td>
<td>...</td>
<td>148</td>
<td>178</td>
<td>86</td>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnover (mio ECU)</td>
<td>32.2</td>
<td>1 170</td>
<td>556</td>
<td>...</td>
<td>1 958</td>
<td>13 038</td>
<td>1 051</td>
<td>9 965</td>
<td>0</td>
<td>...</td>
<td>4 640</td>
<td>269</td>
<td>9 258</td>
<td>11 800</td>
</tr>
<tr>
<td>64.2</td>
<td>...</td>
<td>4 954</td>
<td>4 355</td>
<td>33 871</td>
<td>8 077</td>
<td>25 238</td>
<td>1 969</td>
<td>19 730</td>
<td>348</td>
<td>6 510</td>
<td>4 391</td>
<td>2 966</td>
<td>3 416</td>
<td>5 620</td>
</tr>
<tr>
<td>Turnover per person employed (1000 ECU)</td>
<td>32.2</td>
<td>150</td>
<td>180</td>
<td>...</td>
<td>170</td>
<td>184</td>
<td>276</td>
<td>130</td>
<td>...</td>
<td>292</td>
<td>113</td>
<td>361</td>
<td>353</td>
<td>248</td>
</tr>
<tr>
<td>64.2</td>
<td>...</td>
<td>167</td>
<td>285</td>
<td>...</td>
<td>154</td>
<td>150</td>
<td>200</td>
<td>856</td>
<td>...</td>
<td>187</td>
<td>145</td>
<td>189</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Value added at factor cost (mio ECU)</td>
<td>32.2</td>
<td>624</td>
<td>...</td>
<td>612</td>
<td>3 573</td>
<td>191</td>
<td>3 251</td>
<td>0</td>
<td>...</td>
<td>1 348</td>
<td>74</td>
<td>3 345</td>
<td>5 136</td>
<td>2 907</td>
</tr>
<tr>
<td>64.2</td>
<td>...</td>
<td>3 180</td>
<td>...</td>
<td>7 878</td>
<td>16 695</td>
<td>1 222</td>
<td>12 769</td>
<td>216</td>
<td>...</td>
<td>2 356</td>
<td>1 928</td>
<td>1 629</td>
<td>2 907</td>
<td>...</td>
</tr>
<tr>
<td>Value added at factor cost in production value (%)</td>
<td>32.2</td>
<td>53</td>
<td>...</td>
<td>32</td>
<td>27</td>
<td>18</td>
<td>34</td>
<td>...</td>
<td>46</td>
<td>37</td>
<td>36</td>
<td>42</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>64.2</td>
<td>...</td>
<td>72</td>
<td>...</td>
<td>63</td>
<td>70</td>
<td>66</td>
<td>63</td>
<td>...</td>
<td>62</td>
<td>62</td>
<td>47</td>
<td>...</td>
<td>...</td>
<td></td>
</tr>
<tr>
<td>NACE Rev. 1</td>
<td>B</td>
<td>DK</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>IRL</td>
<td>I</td>
<td>L</td>
<td>NL</td>
<td>A</td>
<td>P</td>
<td>FIN</td>
<td>S</td>
<td>UK</td>
</tr>
<tr>
<td>-------------</td>
<td>---</td>
<td>----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>-----</td>
<td>---</td>
<td>---</td>
<td>----</td>
<td>---</td>
<td>---</td>
<td>-----</td>
<td>---</td>
<td>----</td>
</tr>
<tr>
<td>Gross value added per person employed (apparent labour productivity) (1000 ECU)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.2</td>
<td>81</td>
<td>:</td>
<td>:</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>40</td>
<td>:</td>
<td>85</td>
<td>33</td>
<td>130</td>
<td>154</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>64.2</td>
<td>107</td>
<td>:</td>
<td>:</td>
<td>:</td>
<td>102</td>
<td>92</td>
<td>130</td>
<td>536</td>
<td>:</td>
<td>100</td>
<td>94</td>
<td>90</td>
<td>:</td>
<td></td>
</tr>
<tr>
<td>Personnel costs (mio ECU)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.2</td>
<td>479</td>
<td>106</td>
<td>:</td>
<td>:</td>
<td>382</td>
<td>3 405</td>
<td>137</td>
<td>2 293</td>
<td>0</td>
<td>:</td>
<td>1 002</td>
<td>48</td>
<td>913</td>
<td>1 605</td>
</tr>
<tr>
<td>64.2</td>
<td>1 534</td>
<td>1 056</td>
<td>:</td>
<td>:</td>
<td>2 653</td>
<td>6 742</td>
<td>:</td>
<td>3 668</td>
<td>24</td>
<td>:</td>
<td>1 304</td>
<td>789</td>
<td>574</td>
<td>609</td>
</tr>
<tr>
<td>Share of personnel costs in production value (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.2</td>
<td>40</td>
<td>20</td>
<td>:</td>
<td>20</td>
<td>25</td>
<td>13</td>
<td>24</td>
<td>:</td>
<td>34</td>
<td>24</td>
<td>10</td>
<td>13</td>
<td>15</td>
<td>:</td>
</tr>
<tr>
<td>64.2</td>
<td>34</td>
<td>23</td>
<td>:</td>
<td>:</td>
<td>:</td>
<td>26</td>
<td>19</td>
<td>7</td>
<td>:</td>
<td>21</td>
<td>16</td>
<td>17</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>Labour cost per employee (Unit labour cost) (1000 ECU)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.2</td>
<td>62</td>
<td>62</td>
<td>48</td>
<td>36</td>
<td>20</td>
<td>:</td>
<td>13</td>
<td>:</td>
<td>63</td>
<td>22</td>
<td>36</td>
<td>48</td>
<td>35</td>
<td>:</td>
</tr>
<tr>
<td>64.2</td>
<td>52</td>
<td>20</td>
<td>:</td>
<td>:</td>
<td>:</td>
<td>41</td>
<td>40</td>
<td>60</td>
<td>:</td>
<td>34</td>
<td>28</td>
<td>45</td>
<td>49</td>
<td>:</td>
</tr>
<tr>
<td>Gross operating surplus (mio ECU)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.2</td>
<td>155</td>
<td>32</td>
<td>:</td>
<td>:</td>
<td>146</td>
<td>168</td>
<td>54</td>
<td>958</td>
<td>0</td>
<td>:</td>
<td>346</td>
<td>26</td>
<td>2 431</td>
<td>3 531</td>
</tr>
<tr>
<td>64.2</td>
<td>1 646</td>
<td>:</td>
<td>:</td>
<td>:</td>
<td>9 955</td>
<td>9 101</td>
<td>193</td>
<td>:</td>
<td>1 567</td>
<td>1 354</td>
<td>1 020</td>
<td>1 344</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>Gross operating rate (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.2</td>
<td>13</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>5</td>
<td>10</td>
<td>:</td>
<td>8</td>
<td>10</td>
<td>26</td>
<td>30</td>
<td>15</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>64.2</td>
<td>33</td>
<td>:</td>
<td>:</td>
<td>39</td>
<td>:</td>
<td>46</td>
<td>56</td>
<td>:</td>
<td>36</td>
<td>45</td>
<td>30</td>
<td>24</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>Gross investment in tangible goods (mio ECU)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.2</td>
<td>29</td>
<td>:</td>
<td>30</td>
<td>26</td>
<td>386</td>
<td>0</td>
<td>:</td>
<td>104</td>
<td>:</td>
<td>358</td>
<td>298</td>
<td>596</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>64.2</td>
<td>982</td>
<td>:</td>
<td>:</td>
<td>2 378</td>
<td>3 902</td>
<td>409</td>
<td>4 117</td>
<td>203</td>
<td>:</td>
<td>1 451</td>
<td>1 156</td>
<td>1 060</td>
<td>677</td>
<td>1 087</td>
</tr>
<tr>
<td>Investment per person employed (1000 ECU)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64.2</td>
<td>64</td>
<td>:</td>
<td>24</td>
<td>31</td>
<td>40</td>
<td>500</td>
<td>:</td>
<td>49</td>
<td>52</td>
<td>38</td>
<td>:</td>
<td>:</td>
<td>:</td>
<td>:</td>
</tr>
</tbody>
</table>

Table 1: Main characteristics of telecom hardware manufacturing and telecom services in 1997

Source Eurostat SBS database

telecom hardware manufacturing (NACE Rev.1 32.2)
IRL, A, FIN: 1998 data
I: 1996 data
DK: 1996 data for number of employees and unit labour cost
E: 1996 data for investment per persons employed
L: 1996 data for number of enterprises
EL: no data available
telecom services (NACE Rev.1 64.2)
A, FIN: 1998 data
S, I: 1996 data
B: 1996 data for share of personnel costs in production, value added at factor cost in production value
F: 1996 data for number of enterprises
L: 1996 data for number of enterprises
E: 1994 data for value added at factor cost, personnel costs and gross investment in tangible goods
NL: 1994 data for turnover and number of persons employed: 1993 data for personnel costs, gross investment in tangible goods and number of employees
EL: no data available

Operating surplus and investment - telecommunications services ahead

Looking at the labour cost per section D) showed an average unit employee (unit labour cost), the labour cost figure of about ECU data.

The general picture is that the values for hardware manufacturing and for services (ECU 33 800 – both 1998 employee (unit labour cost), the labour cost figure of about ECU data).

In Denmark, however, it is the opposite picture: the unit labour cost for services (ECU 37 600 – 1996) ranks relatively low, while for manufacturing (ECU 43 000) (average calculated from available data).

As an example, traditional figure for manufacturing of ECU manufacturing industry (NACE 63 100 - more than twice as high as
Across Member States, the comparison shows very different unit labour cost values in manufacturing and in services.

Portugal stands out with the lowest figure for both hardware manufacturing (ECU 21 800) and services (ECU 28 000).

The highest figures for manufacturing (triple the Portuguese value) are registered in Austria (ECU 63 100) and Belgium (ECU 61 500). Denmark (ECU 69 300) and Luxembourg (ECU 60 400) are on top for services (at double the Portuguese value).

The gross operating surplus indicates the result of operating activities after the labour factor input has been recompensed. The gross operating rate is defined as the share of the operating surplus in turnover.

Figure 6 shows that, in general, the operating results achievable in manufacturing are considerably lower than for services in the telecom sector. An exception is Sweden, which after all shows the highest operating rate for manufacturing.

As regards telecom services, Luxembourg is on top with an operating rate of almost 56% (1995 data), followed by Italy (1996 – 46.1%) and Portugal (45.7%). Sweden and Finland are at the other end of the scale with 23.9% and 29.9% respectively.

The national telecommunications operators in nearly all EU Member States have been privatised either completely or partially, or else privatisation is planned for at least some time in the near future.

Market and competitive conditions vary between countries.

Real independence of government ownership has, however, become a more important factor since the liberalisation of the telecom market.

Among the EU Member States, liberalisation is well advanced in the UK, Sweden, Finland, Denmark, France, Germany and the Netherlands, where privatisation of the national operator has also been initiated.

The necessary investments to win market shares in this rapidly developing sector are mainly made in services.

All reporting Member States show particularly high figures both in absolute (see Figure 1 – cover page) and in relative values (investment per person employed – see Table 1).
Universal Mobile Telecommunications System (UMTS) is the third generation of mobile network, enabling much higher data transfer rates than today. It is expected to be commercially available in 2001.

The outcome of the future European UMTS licences is of great importance to all parties involved, i.e. to network operators and telecom equipment manufacturers as well as governments and end users.

EU Member States as well as other European countries have taken two different approaches to commercialising UMTS licences.

In the auction the participants bid for the licences and the highest bidder wins the licence. In the so-called beauty contest, interested companies disclose their ambitions and intentions in an application for the licence. Governments then take their decision on the basis of this application. Some say that the auction is preferable, since the market and its players can decide on their own who will get the UMTS licences.

Those in favour of the beauty contest argue that the customers will pay the high price for the licence with high user fees and that there might not be enough funds left for the large investments required to build the new UMTS network.

In the United Kingdom, the auction for the five licences generated a whopping EUR 36 billion. The investments needed to create this new network are also huge. Vodafone, which got one of the licences in the United Kingdom, has selected Ericsson as its prime partner to build up its own UMTS network. This deal is estimated at about EUR 1.5 billion over the next few years.

The German UMTS licence auction generated EUR 51 billion, split over six licences. Germany is the largest market for mobile telephones in Europe and, because of the relatively low concentration of mobile telephone users, is expected to show a considerable growth rate in the future.

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of licences</th>
<th>Licensing process</th>
<th>Licence award</th>
<th>Commercial launch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>4 to 6 national licenses</td>
<td>auction</td>
<td>Q3 2000</td>
<td>Q1 2002</td>
</tr>
<tr>
<td>Belgium</td>
<td>4 national licenses</td>
<td>auction</td>
<td>Q1 2001</td>
<td>2002</td>
</tr>
<tr>
<td>Denmark</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q3 2001</td>
<td>2002</td>
</tr>
<tr>
<td>Finland</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q2 2001</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>France</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>March 1999</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>Germany</td>
<td>6 national licenses</td>
<td>auction</td>
<td>17.8.2000</td>
<td>2002</td>
</tr>
<tr>
<td>Greece</td>
<td>unknown</td>
<td>unknown</td>
<td>Q1 2001</td>
<td>unknown</td>
</tr>
<tr>
<td>Ireland</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q2 2001</td>
<td>2002</td>
</tr>
<tr>
<td>Italy</td>
<td>5 national licenses</td>
<td>auction</td>
<td>07.12.2000</td>
<td>2002</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>2 national licenses</td>
<td>beauty contest</td>
<td>unknown</td>
<td>unknown</td>
</tr>
<tr>
<td>the Netherlands</td>
<td>5 national licenses</td>
<td>auction</td>
<td>24.7.2000</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>Portugal</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q4 2000</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>Spain</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q4 2000</td>
<td>1.8.2001</td>
</tr>
<tr>
<td>Sweden</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>30.11.2000</td>
<td>2002</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>5 national licenses</td>
<td>auction</td>
<td>27.4.2000</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>Norway</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q4 2000</td>
<td>unknown</td>
</tr>
<tr>
<td>Switzerland</td>
<td>4 national licenses</td>
<td>auction</td>
<td>Q4 2000</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>Liechtenstein</td>
<td>1 national license</td>
<td>beauty contest</td>
<td>01.02.2000</td>
<td>unknown</td>
</tr>
</tbody>
</table>

Table 2: Status of European UMTS licences as at 2 November 2000

Source: UMTS Forum

The future of mobile telecommunications has become a reality: UMTS

Universal Mobile Telecommunications System (UMTS) is the third generation of mobile network, enabling much higher data transfer rates than today. It is expected to be commercially available in 2001.

The outcome of the future European UMTS licences is of great importance to all parties involved, i.e. to network operators and telecom equipment manufacturers as well as governments and end users.

EU Member States as well as other European countries have taken two different approaches to commercialising UMTS licences.

In the auction the participants bid for the licences and the highest bidder wins the licence. In the so-called beauty contest, interested companies disclose their ambitions and intentions in an application for the licence. Governments then take their decision on the basis of this application. Some say that the auction is preferable, since the market and its players can decide on their own who will get the UMTS licences.

Those in favour of the beauty contest argue that the customers will pay the high price for the licence with high user fees and that there might not be enough funds left for the large investments required to build the new UMTS network.

In the United Kingdom, the auction for the five licences generated a whopping EUR 36 billion. The investments needed to create this new network are also huge. Vodafone, which got one of the licences in the United Kingdom, has selected Ericsson as its prime partner to build up its own UMTS network. This deal is estimated at about EUR 1.5 billion over the next few years.

The German UMTS licence auction generated EUR 51 billion, split over six licences. Germany is the largest market for mobile telephones in Europe and, because of the relatively low concentration of mobile telephone users, is expected to show a considerable growth rate in the future.

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of licences</th>
<th>Licensing process</th>
<th>Licence award</th>
<th>Commercial launch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>4 to 6 national licenses</td>
<td>auction</td>
<td>Q3 2000</td>
<td>Q1 2002</td>
</tr>
<tr>
<td>Belgium</td>
<td>4 national licenses</td>
<td>auction</td>
<td>Q1 2001</td>
<td>2002</td>
</tr>
<tr>
<td>Denmark</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q3 2001</td>
<td>2002</td>
</tr>
<tr>
<td>Finland</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q2 2001</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>France</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>March 1999</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>Germany</td>
<td>6 national licenses</td>
<td>auction</td>
<td>17.8.2000</td>
<td>2002</td>
</tr>
<tr>
<td>Greece</td>
<td>unknown</td>
<td>unknown</td>
<td>Q1 2001</td>
<td>unknown</td>
</tr>
<tr>
<td>Ireland</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q2 2001</td>
<td>2002</td>
</tr>
<tr>
<td>Italy</td>
<td>5 national licenses</td>
<td>auction</td>
<td>07.12.2000</td>
<td>2002</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>2 national licenses</td>
<td>beauty contest</td>
<td>unknown</td>
<td>unknown</td>
</tr>
<tr>
<td>the Netherlands</td>
<td>5 national licenses</td>
<td>auction</td>
<td>24.7.2000</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>Portugal</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q4 2000</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>Spain</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q4 2000</td>
<td>1.8.2001</td>
</tr>
<tr>
<td>Sweden</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>30.11.2000</td>
<td>2002</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>5 national licenses</td>
<td>auction</td>
<td>27.4.2000</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>Norway</td>
<td>4 national licenses</td>
<td>beauty contest</td>
<td>Q4 2000</td>
<td>unknown</td>
</tr>
<tr>
<td>Switzerland</td>
<td>4 national licenses</td>
<td>auction</td>
<td>Q4 2000</td>
<td>1.1.2002</td>
</tr>
<tr>
<td>Liechtenstein</td>
<td>1 national license</td>
<td>beauty contest</td>
<td>01.02.2000</td>
<td>unknown</td>
</tr>
</tbody>
</table>

Table 2: Status of European UMTS licences as at 2 November 2000

Source: UMTS Forum

The massive growth within the telecommunications sector is easily illustrated with some data on worldwide mobile telephone terminal sales.

Nokia led and maintained its position as the leading telephone manufacturer with a market share in 1999 of 27%, followed by Motorola (17%) and Ericsson (11%). The average sales growth in this sector was 65% in 1999. The sales figure for Samsung with its enormous growth reflects the success of this company in the United States and in Asia.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nokia</td>
<td>27</td>
<td>23</td>
<td>98</td>
</tr>
<tr>
<td>Motorola</td>
<td>17</td>
<td>20</td>
<td>43</td>
</tr>
<tr>
<td>Ericsson</td>
<td>11</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Samsung</td>
<td>6</td>
<td>3</td>
<td>277</td>
</tr>
<tr>
<td>Panasonic</td>
<td>6</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Others</td>
<td>34</td>
<td>32</td>
<td>77</td>
</tr>
</tbody>
</table>

Total market 100 100 65

Table 3: World-wide mobile telephone terminal sales estimates

Source: Gartner Group’s Dataquest (February 2000)
Database
This Statistics in Focus (SiF) is based on structural business statistics collected under the terms of Council Regulation (EC, EURATOM) No 58/97 of 20 December 1996. The reference data are stored in Eurostat’s reference database New Cronos (theme 4 – domain SBS – collection enterpr – annual enterprise statistics – dft file enter).

Statistical classification
The data are collected mainly according to the statistical classification of economic activities in the European Community (NACE Rev. 1).

This SiF deals with the following NACE groups:

32.2 Manufacturing of television and radio transmitters and apparatus for line telephony and line telegraphy – referred to in this Statistics in Focus as telecom hardware manufacturing.

64.2 Telecommunications – referred to in this Statistics in Focus as telecom services.

Variables

Number of enterprises
A count of the number of enterprises registered to the population concerned in the business register corrected for errors, in particular frame errors. Dormant units are excluded.

Number of persons employed
The total number of persons who work in the observation unit (employees receiving remuneration, working proprietors and unpaid family workers) as well as outside working persons who belong to the unit and are paid by it. It includes all persons who are on the payroll of the enterprise, whether they are temporarily absent (excluding long-term absences), part-time, seasonal or home workers, apprentices etc.

The number of persons employed excludes manpower supplied to the unit by other enterprises and persons carrying out repair and maintenance work in the enquiry unit on behalf of other enterprises.

Number of employees
The number of employees is defined as those persons who work for an employer and who have a contract of employment and receive compensation in the form of wages, salaries, fees, gratuities, piecework pay or remuneration in kind.

Turnover
Turnover comprises the totals invoiced by the observation unit during the reference period, which corresponds to market sales of goods or services supplied to third parties. It includes all duties and taxes on the goods and services invoiced by the unit, with the exception of the VAT invoiced by the unit vis-à-vis its customers and other similar deductible taxes directly linked to turnover.

Production value
The production value is defined as turnover, plus or minus the changes in stocks of finished products, work in progress and goods and services purchased for resale, minus the purchases of goods and services for resale, plus capitalised production and other operating income (excluding subsidies).

Value added at factor cost
Value added at factor cost is the gross income from operating activities after adjusting for operating subsidies and indirect taxes. It can be calculated from turnover, plus capitalised production, plus other operating income, plus or minus the changes in stocks, minus the purchases of goods and services, minus other taxes on products which are linked to turnover but not deductible, minus the duties and taxes linked to production.

Personnel costs
Personnel costs are defined as the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter during the reference period. Personnel costs also include taxes and employees’ social security contributions retained by the unit as well as the employer’s compulsory and voluntary social contributions.

Gross operating surplus
Gross operating surplus is the surplus generated by operating activities after the labour factor input has been recompensed. It can be calculated from the value added at factor cost less the personnel costs. It is the balance available to the unit which allows it to recompense the providers of own funds and debt, to pay taxes and eventually to finance all or a part of its investment.

Gross investment in tangible goods
Investment during the reference period in all tangible goods. Included are new and existing tangible capital goods, whether bought from third parties or produced for own use (i.e. capitalised production of tangible capital goods), having a useful life of more than one year including non-produced tangible goods such as land.

Apparent labour productivity
Apparent labour productivity is defined as value added per person employed.

Unit labour cost
Unit labour cost is defined as personnel costs per employee.

Gross operating rate
Gross operating rate is defined as gross operating surplus/turnover.


Under ‘legal texts’, the above regulations and statistical classification can be downloaded.
Further information:

- **Databases**

  New Cronos, Domain SBS

To obtain information or to order publications, databases and special sets of data, please contact the Data Shop network:

**Belgium/Belgique**
- Eurostat Data Shop
  - Brussels/Bruxelles
  - Place de las Palais 20
  - B-1040 Brussels/Bruxelles
  - Tel: (32-2) 292 36 70
  - Fax: (32-2) 292 36 71
  - E-mail: datashop@statbel.fgov.be

**Denmark/Danmark**
- Danmarks Statistik
  - Statistikcenter
  - DK-1000 Copenhagen K
  - Tel: (45) 33 22 22 00
  - Fax: (45) 33 22 22 01
  - E-mail: info@statis.dk

**Germany/Deutschland**
- Statistisches Bundesamt
  - Eurostat Data Shop
  - Palace of the Castellana, 183
  - 0800 099
  - E-mail: datashop@zahlenstatistik.de

**Spain/Espana**
- Instituto Nacional de Estadística
  - Euromedia Services
  - Paseo de la Castellana, 183
  - 28046 Madrid
  - Tel: (34-91) 537 90 00
  - Fax: (34-91) 537 90 01
  - E-mail: info@ine.es

**France/France**
- Insee
  - Produits et Services
  - E-mail: insee.service@insee.fr

**Italy/Italia**
- Istituto Centrale di Documentazione Statistica
  - Palazzo Tito, Via Cesarina Salvo, 1a
  - I-00184 Roma
  - Tel: (39-06) 47 31 80 06
  - Fax: (39-06) 47 31 80 07
  - E-mail: ipdf@istat.it

**Belgium/Belgique**
- Euromedia Services
  - E-mail: euromedia@ec.eu.int

**Slovakia/Slovensko**
- Eurostat Data Shop
  - Statistical Office of the Slovak Republic
  - Sedlackova 21
  - 821 08 Bratislava
  - Tel: (421-22) 93 22 22
  - Fax: (421-22) 93 22 23
  - E-mail: info@estatis.sk

**Netherlands/Verenigd Koninkrijk**
- Eurostat Data Shop
  - BP 463
  - 2270 JH Voorburg
  - Tel: (31-70) 377 49 00
  - Fax: (31-70) 377 59 84
  - E-mail: datashop@cbs.nl

**Luxembourg/Luxemburg**
- Eurostat Data Shop Luxembourg
  - BP 21
  - 2305 KU Luxembourg
  - Tel: (352) 43 35 22 22
  - Fax: (352) 43 35 22 23
  - E-mail: datashop@statislux.lu

**United Kingdom/Verenigd Koninkrijk**
- Eurostat Data Shop
  - Ufficio Regionale per la Lombardia
  - Via Fieno 3
  - 20123 Milano
  - Tel: (39-02) 8061 32460
  - Fax: (39-02) 8061 32304
  - E-mail: info-service@statisti.it

**Australia/Australie**
- Eurostat Data Shop
  - Tel: (61-2) 9261 9999
  - Fax: (61-2) 9261 9998
  - E-mail: datashop@ec.eu.int

**Canada/Canada**
- Eurostat Data Shop
  - O-1000000
  - Tel: (613) 995 2222
  - Fax: (613) 995 2223
  - E-mail: datashop@ec.eu.int

**Europe/UE**
- Eurostat
  - Office for Official Publications of the European Communities
  - www.europa.eu.int/comm/eurostat/

**Worldwide**
- Media Support Eurostat
  - Tel: (352) 4301 33408
  - Fax: (352) 4301 33409
  - E-mail: datashop@eurostatdatashop.lu

**New Cronos, Domain SBS**

### Order Form

I would like to subscribe to Statistics in focus (from 1.1.2000 to 31.12.2000):

- **Paper + PDF**: EUR 432
- **PDF**: EUR 264
- **Paper**: EUR 360
- **PDF**: EUR 210
- **Combined**: EUR 114

**DE**: Deutscher
**EN**: Englisch
**FR**: Französisch

**Country Selection**

- **Belgium/Belgique**
- **Denmark/Danmark**
- **France/France**
- **Germany/Deutschland**
- **Italy/Italia**
- **Spain/Espana**
- **United Kingdom/Verenigd Koninkrijk**

**Language Required**

- **DE**: Deutscher
- **EN**: Englisch
- **FR**: Französisch

### Payment on Receipt of Invoice, Preferably by

- **Bank transfer**
- **Visa**
- **Eurocard**

**Card No:**

**Expiration:**

Please confirm your intra-Community VAT number:

If no number is entered, VAT will be automatically applied. Subsequent reimbursement will not be possible.